

W6IFE San Bernadino Microwave Society NewsLetter

President Frank Kelly WB6CWN 12653 Hubbard Sylmar CA 91342

818-362-5432 eventeinc@aol.com VP Dick Bremer WB6DNX 1664 Holly Brea CA

92621 714-529-2800 rabremer@pacbell.com Recording Sec Dick Kolbly K6HIJ 26335

Community Barstow CA 92311 619-253-2477 70541.2312@compuserve.com Correspond

Sec Larry Johnston K6HLH 16611 E Valeport Lancaster CA 93535 805-264-4110

ljohns@qnet.com Treasurer George Tillitson K6MBL PO Box 974 Wrightwood CA

92397 619-249-6622 Editor Bill Burns WA6QYR 247 Rebel Rd Ridgecrest, CA

93555 619-375-8566 bburns@ridgecrest.ca.us

The 5 **December 1996** meeting will have Chuck, WA6EXV and Bill, WA6QYR talking about operations and techniques on 24 Ghz with current equipment available.

SBMS meets at the American Legion Hall 1024 Main Street Corona CA at 1930 hours local time.

Last meeting had a tech talk by Kerry Banke, N6IZW of the San Diego Microwave Group. Kerry covered the construction, modification, and operation of the Mt. Miguel 10 Ghz repeater/ amplifier device. Interesting that this machine can copy signals from the Palos Verdes and Frazier Mt. beacons and relay them to San Diego area amateurs. The machine also allows home to home all mode 10 Ghz operations. It will even allow full duplex wide band FM 30 Mhz offset operations. Kerry also talked about the construction of 10 Ghz rigs using hardware from the surplus Qualcomm truck tracking hardware. Kerry brought 4 boxes of the PCB's and other excess things from his garage for members in SBMS. Dick, WB6DNX; Chuck, WA6EXV and Bill, WA6QYR took the boxes home to catalog what was available along with the documentation. The plan was to bring the sorted material to the January meeting for distribution to those needing and willing to work on the pieces to build a rig and get on the air. Dick passed around a sign up sheet for those wishing to pay Xerox costs for copies of the available documentation Enclosed in this newsletter is a list of parts available from Chuck, WB6IGP and Kerry, N6IZW of the San Diego Microwave Group for putting the Qualcomm Excess hardware on the ham bands. 30 people present.

Scheduling

2 Jan 97 Excess Hardware from Kerry, N6IZW

6 Feb. 97 WA6OWD circulator tweaking.

Feb. 8? Annual Dinner - John WA6BFH chairman.

6 March Dick, K6HIJ "Tubes to Semiconductors in Microwave"

15 Mar. "Straight Key" Home-to-Home QSO Microwave event & SSB / FM too.

12-14 Sept. 1997 ARRL SW Div. Convention in Riverside, CA.

Other things going on-

Phil, W6HCC and Dave, K6OW (ex- WA6OWD) are working on use of an Hewlett Packard HP48G or HP48GX calculator to find pointing angle and distance between two grid squares in a similar mode to that of the BD and gridloc software. Phil is using great circle calculations since the source code for DB isn't available. In the future having a hand-held GPS unit and one of the HP calculators will enable them to figure pointing angles in the field without carrying along the bigger and more expensive laptop computer. Phil has provided the calculator listings found later in this newsletter. Thanks Phil.

Another thing Phil and Dave are up to, is the use of the CMOS Super Keyer 2 or 3 to provide automatic sending of those calls and grid squares over and over and over again for those DX microwave contacts. Having this memory filled "on the fly" type operation allows the rover to put in the current grid data and the two station calls, then push a button to send it as many times as required to make the contact. This even has a 'key-down" condition to send that "CW" carrier needed to get pointing angles tweaked up. Descriptions of the keyers is found in November 1990 QST p18 and August 1995 QST p26. They can be purchased from Idiom Press, Box 1025 Geyserville, CA 95441 for on the order of \$50 and \$60. See the Idiom Press ad in current QSTs.

10 Ghz Stuff off the net-Subject: 10 GHz antenna structures ? - drawings ? Hello all, I'm finishing a transformation of some 10 GHz boards I got thanks to Kerry (N6IZW) and Chuck (WB6IGP). I would appreciate to have some information about a omnidirectionnal and a half space directional antenna for building a beacon first, and then try a narrow band repeater. All I have today is a small horn and a TV dish antenna not yet modified... For those who read French ?? you can see the pages of our association at <http://www.voiron.com/associations/ham/arrad.html> Best 73 to all. Alexandre CASTELLANE F5SFU 29 rue Nicolas Chorier 38000 GRENOBLE 33 76 49 06 92 Email : alexandre.castellane@st.com

From: wade@tiac.net (Paul Wade, N1BWT & Beth Wade, N1SAI) Subject: N1BWT 10 GHz home page update I put a bunch of new stuff on the 10 GHz home page this weekend. <http://www.tiac.net/users/wade> My hope was to update it monthly, but the 10 GHz contest and Microwave Update seem to have preempted a couple of months. I'll try to get back to monthly, so check occasionally. Your contributions and suggestions are welcome. 73 paul , N1BWT

24 Ghz Stuff off the net-Subject: 24 GHz Progress-- Hi Chip and everybody on the list! As of this afternoon I got the 24 GHz Gunn system here with its 12-inch, 33 dBi dish (measured by WA6EXV) on the air, although it still needs a little work. The 30 MHz I.F. RX is getting too much signal from the preamp that Chuck added to the antenna/Gunnplexer unit. I have to add some attenuation which is complicated by the presence of +12VDC on the i.f. coax going up to power the preamp. It may be simpler to eliminate one stage of gain in the ARR receiver unit. The big news is the acquisition of a precision frequency marker for 24,125.000 MHz thanks to N6IZW's overnight mods to a Qualcomm RF board and synthesizer. I had asked Kerry what it would take to produce such a marker. On the phone we discussed some of the possibilities and he said he wanted to try them using the most recent hardware. The desired marker would be at half the frequency, since this is close to the 13 GHz where the boards were designed to work. So to get 12,062.5 MHz he figured the following: The existing multiplier on the main RF board usually is a X4 multiplier, but by some small retuning it can be a X5. This requires a synthesizer VCO output of 2412.5 Mhz. In the Synthesizer this is prescaled by a factor of 2 to 1206.25 MHz. Kerry figured that the PLL could be run at 1.25 Mhz instead of the 2.0 Mhz he has been using for the 10.368 GHz conversions. The resulting N factor is 965, required to multiply 1.25 MHz to 1206.25. The N factor is programmed into the

synthesizer by the technique of lifting pins and grounding pins as in the previous mods. The M and A factors which produce $N=965$ are $M=95$ and $A=5$. To get the 10.00 MHz TCXO reference down to 1.25 MHz for the PLL requires an R factor of 7. Kerry said he also needed to change the PLL loop filter to optimize it for 1.25 Mhz. Kerry thought this would work, and spent Tuesday evening (!) making these changes and retuning the multiplier in a Qualcomm assembly. He checked it out on Wednesday using a 24 GHz spectrum analyzer and said he measured strong marker output at about -55 dBm picked up by a probe held several feet from the unshielded Qualcomm boards. Last night he delivered it to me. Today I fired up the Gunn system with 5.00 VDC on the Gunn diode. This was 24.15 GHz according to WA6EXV's notes from his antenna measurement. Then I hooked a 12V battery to the marker produced by N6IZW. My dish was about five feet from the Qualcomm board, and pointed in the opposite direction. I tuned the Gunn voltage a little, and a REALLY STRONG, perfectly clean signal was received!! There was no intentional antenna or output connection from the marker generator, just the radiation from the boards or the clip-leads going to the battery. Kerry believes that this approach may lead to possible future 24 Ghz up/down conversion using the same hardware. I think it is remarkable how quickly he was able to devise this marker modification and make it work. 73s from Ed, W6OYJ (619) 453-4563 email 75353.1255@compuserve.com

Subject: Mathcad Hi, A few people have inquired about how to find Mathcad. Mathsoft (the creator of Mathcad) has a web browser for the PC that you can use to view Mathcad files. You can download the browser and a demo version of Mathcad from the following URL: <http://www.mathsoft.com/browser/index.html> Any feedback on how well this works for you would be appreciated. 73, Brian KD6LI Phone: (415) 933-6897 E-mail: byee@sgi.com

Subject: Re: Where to find Wave Guide Slot Antenna info on the Web . I finally finished typing the slot antenna info into the web page. Both the article and the Mathcad program (in textual form) are on this URL:http://reality.sgi.com/employees/byee_engr/slot_ant.html. Be sure to check out the rest of my web site, too. I am always looking for new material to put in it. 73, Brian KD6LI Phone: (415) 933-6897 E-mail: byee@sgi.com

November 14, 1996 To all radio amateurs SB QST ARL ARLB080 ARLB080 New 2.3 GHz serviceThe FCC has proposed to create a new Wireless Communications Service (WCS) in the 2305-2320 and 2345-2360 MHz bands and to award licenses on the basis of competitive bidding. The bands include a 5 Mhz segment that Amateur Radio shares with government services between 2305 and 2310 MHz. Just before it adjourned, the 104th Congress approved a provision as part of the much-larger appropriations bill that directed the FCC to put the 30 MHz of spectrum in the 2.3 Ghz region up for competitive bidding to help balance the budget. It's believed to be the first time the Congress has ordered the reallocation of specific frequencies. The National Telecommunications and Information Administration (NTIA) had identified for reallocation the amateur segments 2300-2310 MHz and 2390-2400 MHz in May 1994, so reallocation of part of that subband came as no surprise. At its special session in October, the ARRL Board of Directors approved a proposal to seek an increase in the amateur service allocation status, from secondary to primary, in the 2300-2305 MHz segment. The FCC says the new WCS service would allow licensees to provide any fixed, mobile or radiolocation service, or satellite Digital Audio Radio Services (satellite DARS), consistent with the international frequency allocations for these bands. The Commission also proposed to adopt no restrictions on eligibility for a WCS license and to allow WCS licensees "to partition their service areas, disaggregate spectrum, and franchise portions of their spectrum or service areas on a leased basis." Competitive bidding for the two segments will begin no later than next April 15. Comments are due by December 4, 1996, and reply comments by December 16, 1996.

ARRL Bulletin 81 ARLB081From ARRL Headquarters Newington CT November 16, 1996. The ARRL Committee of Tellers for the election of directors and vice directors for the 1997 through 1998 term met at ARRL Headquarters November 15 to count ballots. Here are the results. Hudson division for director, Frank Fallon, N2FF, 2168. Richard Sandell, WK6R, 1680. New England division for director, Tom Frenaye, K1KI, 2705. Bill Burden, WB1BRE, 1523. Northwestern division for director, Mary Lou Brown, NM7N, 2902. Mary Lewis, W7QGP, 1803. Roanoke division for director, John Kanode, N4MM, 2340. Reed Whitten, AB4W, 2095. Rocky Mountain division for director, Marshall Quiat, AG0X, 1490. Gunnar Carlson, AE4W, 768. Southwestern division for director, Fried Heyn, WA6WZO, 4010. Glenn Webb, W6FP, 1973. Central division for vice director,

Howard Huntington, K9KM, 2188. Mike Hoshiko, W9CJW, 2095. Hudson division for vice director, J.P. Kleinhaus, W2XX, 1905. Peter Malvasi, WB2BYQ, 1864. New England division for vice director, Don Haney, KA1T, 2908. Hal Offutt, W1NN, 1274. In each case the candidate receiving the greatest number of votes was declared elected. The terms of office are for two years, beginning at noon January 1, 1997.

San Diego Report for November 96 11/20/96 On Sunday 10 November the San Diego Association of Amateur Radio Clubs (SANDARC) held its annual Ham Roundup at a local park. Included among the amateurs and clubs exhibiting their activities and station setups were Art KC6UQH and Ken N6ALA. Art demonstrated 10 GHz voice ssb communications to the attendees by contacting John WB6BKR on Mt Soledad (direct) and Ed W6OYJ at his home QTH by double bounce through the recently reinstalled Mt San Miguel 10 GHz on-frequency repeater. Art and Ken also demonstrated a local 10 GHz ATV loop and received a live picture on 3.4 GHz from the Santiago Peak ATV repeater, about 70 miles away. Later, John, WB6BKR also moved to the Roundup location and worked W6OYJ via the Miguel repeater. Neither Art or John had a clear shot at the repeater due to buildings and trees nearby. Their ssb signals were copied by W6OYJ but not as strong as his, due to his clear path to the mountain. We are learning that this linear repeater does not always produce good results in both directions, because a weak input signal will produce a weak output signal, different from our experiences with conventional repeaters which have a consistent output power. On 13 November Ray N6RE spoke to the Palomar Amateur Radio Club meeting in Carlsbad, and described his developments of 10 GHz ATV equipment. He included a videotape of reception at his home QTH in Westminster of the live camera at the Santiago Peak repeater. This was very impressive, showing significant detail when aimed at the Spruce Goose hanger at Long Beach harbor, 40 miles from the camera. At the San Diego Microwave Group meeting on 18 November, Rod, KM6SN demonstrated his homebrew UHF spectrum analyzer based on the surplus UHF TV converters obtained by Chuck WB6IGP and Kerry N6IZW. He used an NE604 IC in the i.f. which has a calibrated log output covering about a 60 dB range. Also demonstrating equipment was W6OYJ who had completed a 24 GHz Gunn system with a 12-inch 1943 war surplus dish/feed and using a 6 milliwatt Gunn TX source. Ed also displayed the precision 24.125 GHz frequency marker assembled by N6IZW using a Qualcomm synthesizer and multiplier chain. KC6UQH displayed the homebrew 3.48 GHz horn antenna he used at the Ham Roundup to receive the Santiago Peak ATV repeater. At next month's meeting the members threatenxxxxxx promised to bring outstanding items of previously owned microwave hardware for the annual white elephant gift exchange. (Third Monday, 7PM, N6IZW QTH). It was agreed that it is not in the holiday spirit to give the giftee a card promising to have the real gift delivered FOB on his doorstep. 73s from Ed, W6OYJ

ARRL PACIFIC DIVISION UPDATE DECEMBER, 1996 by Brad Wyatt, K6WR, Director, Pacific Division, ARRL 18400 Overlook Rd. #5, Los Gatos CA 95030-5850 Pacific Division Home Page -- <http://www.pdarrrl.org/>. New RF Safety Rules Effective Jan. 1, 1997:- As has been reported widely, new RF safety rules go into effect for US hams effective Jan. 1, 1997. Thus far little information has been released which provides guidance to the amateur community regarding exactly what must be done to comply with the new regulations. The FCC stated in its Order, announcing the new rule, that a revised version of FCC OET Document 65 would be released well before the first of the year, and that it would contain guidelines suitable for amateur use. Unfortunately, that revised OET Document 65 has been slow in coming. A preliminary revision was released for review in late September, but it provided little explicit guidance for the amateur. Because the deadline is rapidly approaching, the ARRL Board of Directors, at their meeting in late October, asked that the FCC be petitioned to delay the implementation date by one year. Meanwhile, as the FCC considers the request for delay (which was also requested by commercial interests), the ARRL, together with a group of volunteer experts, is working with the FCC to expand and improve the Document 65 coverage for hams. There will be a summary report in January QST. For more information, see Oct. 1996 QST, page 9, for the K1ZZ editorial, and pages 78 et seq. for details on the Docket. See also Pacific Div. Update for Nov. 1996 and QST for Dec. 1996. The text of this Docket can be found on the FCC web site at http://www.fcc.gov/Bureaus/Engineering_Technology/Orders/fcc96326.txt. Also, see the ARRL WWW site at <http://www.arrl.org/news/rfsafety/> for current information.

The Tucson Amateur Packet Radio Assoc. (TAPR) received approval from FCC in early November to begin experiments with Spread Spectrum techniques, on a non-interference basis, on bands from 50 MHz and up

including 219 MHz. Essentially, the rules are the same as the existing K6KGS Spread Spectrum STA. The details on experiments to be performed as to timing, frequency bands, and geographic locations are being developed.

ARRL Board Actions at the Oct. 24 and 26 Meeting:-On ET Docket 93-62, the RF safety docket (see above), the Board of Directors directed staff to seek an extension of the compliance date to January 1, 1998. The request has been submitted. Responding to the continuing problem of minimal FCC enforcement activity, the ARRL will petition the FCC to create procedures to allow submission of private sector complaints of serious rule violations directly to the FCC's Chief Administrative Law Judge, hurdling bureau processing delays. ARRL President Rodney Stafford, KB6ZV, was authorized to sign a formal agreement with the National Frequency Coordinators' Council, effecting the so-called single point of contact concept. In view of the congressional mandate imposed on the FCC to auction the 2305-2320 MHz band for commercial purposes, ARRL will seek an increase in the amateur service allocation status, from secondary to primary, in the remaining 2300-2305 MHz Amateur segment.

Listed in the 1993 ARRL Handbook under component data, suppliers for microwave parts in small quantities, p 35-38. BCD Electro PO Box 450207 Garland, TX 75045-0207 214-343-1770 Communications Concepts, Inc 508 Millstone Dr Xenia, OH 45385 513-426-8600 Digi-key Corp PO Box 677 Thief River Falls, MN 56701-0677 800-344-4539 Microwave Components of Michigan PO Box 1697 Taylor, MI 48180 313-753-4581 evenings Mini Circuits Labs PO Box 350166 Brooklyn, NY 11235-0003 718-934-4500 min order \$50 Motorola Semiconductor Products Inc PO Box 20912 Phoenix, AZ 85036 RF Parts Co 1320-16 Grand Ave San Marcos, CA 92069 619-744-0700 min order \$20 Richardson Electronics 116 S Long Beach Rd Rockville Centre, NY 11570 800-348-5580 Watkins Johnson Co Componenets Div 3333 Hillview Ave Palo Alto, CA 94304 415-493-4141 newer address for Down East Microwave Steve Kostro N2CEI 954 Rt 519 Frenchtown, NJ 08825 908-996-3584 <http://www.downeastmicrowave.com/index.html>

73's Bill

back to [SBMS homepage](#)